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REMARKS

In the Office Action, the Examiner again rejected claim 5 pursuant to 35 U.S.C. § 112, second paragraph, as indefinite. The Examiner suggested an amendment to a uniform sensitivity technique. Claim 5 has been amended accordingly without narrowing.

The Examiner again rejected claims 1-3, 5, 6, 9-12, 14, 15, and 17 pursuant to 35 U.S.C. § 102(b) as anticipated by Fu, et al. (U.S. Patent No. 4,431,936). Claims 2 and 11 were again rejected pursuant to 35 U.S.C. § 103(a) as unpatentable over Fu, et al. in view of Nudell, et al. (U.S. Patent No. 5,085,220). Claims 4 and 13 were again rejected pursuant to 35 U.S.C. § 103(a) as unpatentable over Fu, et al. in view of Robinson, et al. (U.S. Patent No. 6,419,633). Claims 7 and 16 were again rejected pursuant to 35 U.S.C. § 103(a) as unpatentable over Fu, et al. in view of Ma (U.S. Patent No. 6,599,245). Claims 8, 17, and 18 were again rejected pursuant to 35 U.S.C. § 103(a) as unpatentable over Fu, et al. in view of Stephens (U.S. Application Publication No. 2004/0054287) and Robinson, et al. Claims 19 and 20 were again rejected pursuant to 35 U.S.C. § 103(a) as unpatentable over Fu, et al. in view of Stephens and Robinson, et al.

Applicants respectfully request reconsideration of the rejections of claims 1-20, including independent claims 1, 3, 8, 9, and 18. *New arguments are provided in italics below.*

Independent claim 1 recites using elements from at least three rows of elements in an annular ring element and a center annular element for measuring volume flow and at least one of the rows for imaging, where the rows of elements are straight along an azimuth dimension and have rectangular elements. Independent claim 1 now includes the limitations of claim 6 with the further limitation that the rows be straight along the azimuth dimension and have rectangular elements.

The Examiner cited to col. 7, lines 5-14 and figure 10b of Fu, et al. Figure 10b shows one straight row, but two other rows with curved elements. Fu, et al. use an array designed to be an annular array with annular elements, so Fu, et al. do not suggest at least three straight rows having rectangular elements.

PAGE 7/11 * RCVD AT 4/16/2007 6:18:43 PM [Eastern Daylight Time] * SVR:USPTO-EFXRF-3/3 * DNIS:2738300 * CSID:6509684517 * DURATION (mm-ss):03-08

The Examiner relies on Figures 8 and 9 of Fu, et al. for the three straight rows along an azimuth dimension and having rectangular elements. Figures 8 and 9 show three rows of elements. However, the teachings for Figs. 8 and 9 do not suggest use as annular ring and center annular elements as claimed. The three rows are used to insonify as an entire array with the center array segments narrowly focusing (col. 6, line 42-col. 7, line 4). The annular ring approach is tough as an alternative array of Fig. 10b (col. 7, lines 10-14). Fu, et al. use an annular ring array for measuring in one embodiment, and use another array without any annular grouping in another embodiment. Fu, et al. do not suggest an array of three rows of elements grouped for measuring into an annular ring element and a center annular element. Fu, et al. do not teach the claimed limitations.

Independent claim 3 recites imaging by operating the array as a 1.5D array. The Examiner notes Fu, et al. do not disclose 1.5D array, but also notes that such arrays are known. Claim 3 was rejected as anticipated by Fu, et al., but Fu, et al. do not show all the limitations. The array of Fu, et al. may be steerable in elevation, so 1.5D operation is not inherent. Claim 3 is allowable.

Since Fu, et al. use the array as an annular array, annular steering is likely, not 1.5D steering. Fu, et al. even note operation of each element with independent amplitude and timing for steering (col. 4, lines 39-45). Fu, et al. teach independent element operation of an annular array, so a person of ordinary skill in the art would not have used 1.5D operation with the array of Fu, et al.

The Examiner takes official notice of the use of 1.5D arrays. However, claim 3 recites measuring from an annular configuration and performing two-dimensional imaging operated as a 1.5D array, both with a same array. Fu, et al. do not disclose this combination.

Independent claim 8 recites three rows having a first length, but a kerf extending in azimuth less than the first length. The Examiner relies on Stephens's disclosure of kerf (paragraph 97). However, Stephens discloses kerfs extending the full length of the array of elements. The paragraph 97 discussion concerns whether to cut the flex circuit, not the piezoelectric elements, for acoustic isolation. The flex is cut fully in azimuth in Stephens. The extra, optional cut is for the ends of the array. Stephens does not disclose a kerf extending only partially along a row of elements in azimuth.

The Examiner cites again to paragraph 97 of Stephans. The Examiner alleges "that elements may be left connected..." However, the full quote is that <u>*the ends*</u> *of the "diving boards" may be left connected,* <u>*not elements*</u>*. The cuts 104 are extensions of or separate cuts than used for the kerfs 62 of the elements. The kerfs 62 of the elements extend the full length in azimuth. Stephans does not show a kerf extending* <u>*in azimuth*</u> *less than the length of the three rows of the transducer array.*

Stephans describes, in paragraph 97, whether to cut the flex at all in elevation. The elements of Fig. 19 are spaced in azimuth, so the kerfs in the flex are in elevation. The flex may be cut in elevation to the edges of the flex (separate diving boards) or only to the elevation edges of the elements (connected flex). There is no kerf in azimuth.

Independent claim 9 includes limitations similar to claim 1, but with four rows of elements and without the straight limitation. Fu, et al. show one linear row with two annular arrangements alleged to be rows by the Examiner (figure 10b). Fu, et al. do not suggest at least four rows of elements in a fully sampled NxM grid.

The Examiner cites to Figs. 8 and 9 of Fu, et al. However, Figs. 8 and 9 only show three rows of elements, not four. Fu, et al. also do not show the combination of annular configuration with an array of rows of elements.

Independent claim 18 recites a kerf extending less than an azimuth length of the array. Claim 18 is allowable for the same reasons as claim 8.

The dependent claims depend from corresponding independent claims, so are allowable for the same reasons. Other dependent claims include limitations the same or similar to other independent claims, so are allowable for the same reasons (e.g., claim 17 is allowable for the same reasons as claim 8).

Further limitations patentably distinguish from the cited references. For example, claims 19 and 20 recite relative element sizes. The Examiner notes the sparse array of Robinson and associated switching configuration, and then concludes that the possibility of structural configuration and thus the configuration would have been known to a person of ordinary skill in the art. However, a possibility does not suggest actual configuration. Electrical switching of a sparse array does not result in elements with the recited sizes. The switched elements are still the same size.

The Examiner alleges that, since there is no criticality for the named arrangements and because the arrangements are satisfied by switching, the rejected is maintained.

First, a range is not claimed, so criticality is not relevant for obviousness. Claims 19 and 20 recite specific arrangements not suggested by Robinson, et al. or Fu, et al. Second, there is no suggestion to switch in the arrangement recited by claims 19 and 20.

The Examiner also notes that size is not claimed. However, relative widths in elevation of elements is recited. In combination with the recited kerfs, claims 19 and 20 provide actual elements not provided by switching together of same sized elements of Robinson, et al.

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CONCLUSION:

Applicants respectfully submit that all of the pending claims are in condition for allowance and seeks early allowance thereof. If for any reason, the Examiner is unable to allow the application but believes that an interview would be helpful to resolve any issues, he is respectfully requested to call the undersigned at (650) 943-7554 or Craig Summerfield at (312) 321-4726.

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